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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/555,079	10/12/2006	John Mak	100325.0208US	9101

24392 7590 04/13/2009

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EXAMINER

DOERRLER, WILLIAM CHARLES

ART UNIT	PAPER NUMBER
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3744

MAIL DATE	DELIVERY MODE
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04/13/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/555,079	Applicant(s) MAK ET AL.	
	Examiner William C. Doerrler	Art Unit 3744	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 October 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>1-26-2006</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-4,6-12 and 16-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Markbreiter et al (3,837,172) in view of Johnson et al (5,457,951). Markbreiter et al discloses applicants' basic inventive concept, a plant which expands a liquid natural gas stream to produce work (in turbine 6), substantially as claimed with the exception of using the refrigeration content of the natural gas to cool a heat source. Johnson et al's heat exchanger 16 shows this feature to be old in the liquid natural gas utilization art. It would have been obvious to one of ordinary skill in the art at the time of applicants' invention from the teaching of Johnson et al to modify the natural gas

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heating and expanding system of Markbreiter et al by cooling a heat source in the associated plant to improve overall efficiency by reducing the fuel required to vaporize the natural gas.

Claims 5-7, 13-15 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over the prior art as applied in the immediately preceding paragraph and further in view of Shu et al (6,125,653).

Markbreiter et al, as modified above, disclose applicants' basic inventive concept, a system which vaporizes liquid natural gas to produce work which cools a heat source in the plant, substantially as claimed with the exception of using a deethanizer to produce ethane from the feed stream. Shu et al show this feature to be old in the natural gas processing art. It would have been obvious to one of ordinary skill in the art at the time of applicants' invention from the teaching of Shu et al to use a deethanizer to produce ethane from a natural gas feed to improve the commercial aspects of the separated products.

Claims 1-4,8-12 and 16-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rambo et al (5,114,451) in view of Johnson et al (5,457,951). Rambo et al discloses applicants' basic inventive concept, a plant which expands a liquid natural gas stream to produce work (see column 3 lines 51-61), substantially as claimed with the exception of using the refrigeration content of the natural gas to cool a heat source. Johnson et al's heat exchanger 16 shows this feature to be old in the

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liquid natural gas utilization art. It would have been obvious to one of ordinary skill in the art at the time of applicants' invention from the teaching of Johnson et al to modify the natural gas heating and expanding system of Rambo et al by cooling a heat source in the associated plant to improve overall efficiency by reducing the fuel required to vaporize the natural gas.

Claims 5-7, 13-15 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over the prior art as applied in the immediately preceding paragraph and further in view of Shu et al (6,125,653). Rambo et al, as modified above, disclose applicants' basic inventive concept, a system which vaporizes liquid natural gas to produce work which cools a heat source in the plant, substantially as claimed with the exception of using a deethanizer to produce ethane from the feed stream. Shu et al show this feature to be old in the natural gas processing art. It would have been obvious to one of ordinary skill in the art at the time of applicants' invention from the teaching of Shu et al to use a deethanizer to produce ethane from a natural gas feed to improve the commercial aspects of the separated products.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Wei shows an ethylene refrigeration system. Brundige and Keller show LNG vaporizers which use the extracted heat of vaporization. Mak shows a similar case by one of the same inventors, which has been made distinct from the current claims by the latest amendment made to the '171 application.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to William C. Doerrler whose telephone number is (571) 272-4807. The examiner can normally be reached on Monday-Friday 6:30-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cheryl Tyler can be reached on (571) 272-4834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/William C Doerrler/
Primary Examiner, Art Unit 3744

WCD